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By: [signature]

PATENT
20093A-002220US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

ERIC H. HOLMES et al.

Parent Application No.: 09/298,886
Application No.: Not Assigned

Parent Filed: April 23, 1999
Filed: Herewith

For: NUCLEIC ACIDS AND PROTEINS OF A RAT GANGLIOSIDE GM1-SPECIFIC ALPHA 1→2 FUCOSYLTRANSFERASE AND USES THEREOF

Parent Exr. S. Haushal
Examiner: Not Assigned

Parent Art Unit: 1633
Art Unit: Not Assigned

PRELIMINARY AMENDMENT

Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

The present application is a divisional of co-pending application United States Serial Number 09/298,886. Prior to examination of the above-referenced application, please enter the following amendments and remarks.

IN THE SPECIFICATION:

Kindly delete pages i through iii.

At page 1, line 3, kindly add the following:

--The present application is a divisional application of United States Serial Number 09/298,866, filed April 23, 1999, the entire disclosure of which is hereby incorporated by reference.--

At page 53, please delete lines 9-12 and replace with the following: --An appendix showing all changes to the specification is attached to this amendment as required by 35 C.F.R. § 1.121(b).

--Microorganisms	Accession Number
CAT-RFT-pPROTA in E. coli INVα	207225
FL-RFT-pcDNA3 in E. coli DH5α	207224--

IN THE CLAIMS:

Kindly delete claims 1-47 and 60-62 without prejudice to Applicants' right to prosecute the subject matter of the claims in a related co-pending application.

Kindly replace claims 48-53 with the following substitute claims. An appendix showing all changes to these claims is attached to the Preliminary Amendment as required under 37 C.F.R. § 1.121(b).

48. (Amended) A method for the preparative synthesis of a molecule comprising Fucα1→2Galβ1→3GalNAc, said method comprising contacting an isolated or purified α1→2fucosyltransferase comprising an amino acid sequence as depicted in Figure 5 (SEQ ID NO: 8) with GDP-fucose and a molecule having a terminal Galβ1→3GalNAc moiety and recovering the molecule comprising Fucα1→2Galβ1→3GalNAc.

49. (Amended) A method for the preparative synthesis of a glycolipid, glycoprotein, glycolipoprotein or free oligosaccharide comprising Fucα1→2Galβ1→3GalNAc, said method comprising contacting an isolated or purified protein comprising an amino acid sequence as depicted in Figure 5 (SEQ ID NO: 8) with GDP-fucose and a glycolipid,

glycoprotein, glycolipoprotein or free oligosaccharaide having a terminal Galβ1→3GalNAc moiety and recovering the glycolipid, glycoprotein, glycolipoprotein or free oligosaccharaide comprising Fucα1→2Galβ1→3GalNAc.

50. (Amended) The method according to Claim 49 wherein the α1→2fucosyltransferase is contacted with an oligosaccharide comprising a terminal Galβ1→3GalNAc moiety.

51. (Amended) A method for the preparative synthesis of fucosyl-GM_1 comprising contacting an isolated or purified α1→2fucosyltransferase comprising an amino acid sequence as depicted in Figure 5 (SEQ ID NO: 8) with GDP-fucose and the ganglioside GM_1 and recovering fucosyl-GM_1.

52. (Amended) A method for the preparative synthesis of a molecule comprising Fucα1→2Galβ1→3GalNAc, said method comprising contacting a recombinant α1→2fucosyltransferase or a cellular fraction of a recombinant cell containing a vector having a nucleotide sequence that encodes and expresses an amino acid sequence as depicted in Figure 5 (SEQ ID NO: 8) and having α1→2 fucosyltransferase activity, with GDP-fucose and a molecule having a terminal Galβ1→3GalNAc moiety and recovering a molecule comprising Fucα1→2Galβ1→3GalNAc.

53. (Amended) A method for the preparative synthesis of a glycolipid, glycoprotein, glycolipoprotein or free oligosaccharide comprising Fucα1→2Galβ1→3GalNAc, said method comprising contacting an isolated or purified recombinant produced rat α1→2fucosyltransferase or a cellular fraction of a recombinant cell containing a vector having a nucleotide sequence as depicted as SEQ ID NO: 7 and having α1→2 fucosyltransferase activity, with GDP-fucose and a glycolipid, glycoprotein, glycolipoprotein or oligosaccharide having a terminal Galβ1→3GalNAc moiety and recovering a glycolipid, glycoprotein, glycolipoprotein or free oligosaccharide comprising Fucα1→2Galβ1→3GalNAc.

Please insert the following new claims:

63. (New) A method for the preparative synthesis of a molecule comprising Fuc α1→2 Galβ1→3 GalNAc, said method comprising contacting an isolated or purified α1→2 fucosyltransferase comprising an amino acid sequence as depicted in Figure 3A (SEQ ID NO: 10) with GDP-fucose and a molecule having a terminal Gal β1→3GalNAc moiety and recovering the molecule comprising Fuc α1→2 Galβ1→3GalNAc.

64. (New) A method for the preparative synthesis of a molecule comprising Fuc α1→2 Galβ1→3 GalNAc, said method comprising contacting an isolated or purified α1→2 fucosyltransferase consisting of an amino acid sequence as depicted in Figure 5 (SEQ ID NO: 8) with GDP-fucose and a molecule having a terminal Gal β1→3GalNAc moiety and recovering the molecule comprising Fuc α1→2 Galβ1→3GalNAc.

65. (New) A method for the preparative synthesis of a molecule comprising Fuc α1→2 Galβ1→3 GalNAc, said method comprising contacting an isolated or purified α1→2 fucosyltransferase consisting of an amino acid sequence as depicted in Figure 3A (SEQ ID NO: 10) with GDP-fucose and a molecule having a terminal Gal β1→3GalNAc moiety and recovering the molecule comprising Fuc α1→2 Galβ1→3GalNAc.

66. (New) A method for the preparative synthesis of a molecule comprising Fucα1→2 Galβ1→3GalNAc, said method comprising contacting an isolated or purified α1→2 fucosyltransferase the amino acid sequence of which consists of a catalytic domain defined by amino acids numbers 28-380 as depicted in Figure 5 (SEQ ID NO: 8) or by amino acids numbered 1-353 as depicted in Figure 3A (SEQ ID NO: 10).

67. (New) The method according to claim 63, wherein the molecule is a glycolipid, a glycoprotein, a glycolipoprotein or a free oligosaccharide.

68. (New) The method according to claim 64, wherein the molecule is a glycolipid, a glycoprotein, a glycolipoprotein or a free oligosaccharide.

69. (New) The method according to claim 65, wherein the molecule is a glycolipid, a glycoprotein, a glycolipoprotein or a free oligosaccharide.

70. (New) The method according to claim 66, wherein the molecule is a glycolipid, a glycoprotein, a glycolipoprotein or a free oligosaccharide.

71. (New) A method for the preparative synthesis of a fucosyl-GM_1, comprising contacting an isolated or purified $\alpha 1 \rightarrow 2$ fucosyltransferase comprising an amino acid sequence as depicted in Figure 3A (SEQ ID NO: 10) with GDP-fucose and the ganglioside GM_1, and recovering fucosyl-GM_1.

72. (New) A method for the preparative synthesis of a molecule comprising Fuc$\alpha 1 \rightarrow$2Gal$\beta 1 \rightarrow$3GalNAc, said method comprising contacting a recombinant $\alpha 1 \rightarrow 2$ fucosyltransferase or a cellular fraction of a recombinant cell containing a vector having a nucleotide sequence that encodees and expresses an amino acid sequence as depicted in Figure 3A (SEQ ID NO. 10) and having $\alpha 1 \rightarrow 2$ fucosyltransferase activity, with GDP-fucose and a molecule having a terminal Gal$\beta 1 \rightarrow$3balNAc moiety and recovering a molecule comprising Fuc$\alpha 1 \rightarrow$2 Gal$\beta_1 \rightarrow$3Gal NAc.

73. (New) The method according to claim 72, wherein the molecule is a glycolipid, a glycoprotein, a glycolipoprotein, or a free oligosaccharide.

74. (New) The method according to claim 71, wherein the amino acid sequence is encoded by the nucleotide sequence as depicted as SEQ ID NO: 7.

75. (New) The method according to claim 72, wherein the amino acid sequence is encoded by the nucleotide sequence as depicted as SEQ ID NO: 9.

REMARKS

The present amendment cancels claims 1-47 and 60-62 without prejudice to Applicants' right to prosecute which are directed to other patentably distinct groups disclosed and claimed in the present application. With entry of the present amendment claims 48-52 and new claims 63-75 will be pending. The specification has been amended to include information relating to the co-pending parent application, to cancel pages i-iii comprising a Table of Contents, and to incorporate the American Type Culture Collection Accession numbers. Further, claims 48-52 have been amended to remove the multiple dependency. New claims 63-75 have been added to encompass the subject matter of the multiple dependency. No new matter is believed to be added by the above amendments.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 206-467-9600.

Respectfully submitted,

Dated: 1 November 2001 By: Brian W. Poor

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Microorganisms	Accession Number
CAT-RFT-pPROTA in E. coli INVα	[—]207225
FL-RFT-pcDNA3 in E. coli DH5α	[—]207224

IN THE CLAIMS:

48. (Amended) A method for the preparative synthesis of a molecule comprising Fucα1→2Galβ1§→3GalNAc, said method comprising contacting [the]an isolated or purified [rat] α1→2fucosyltransferase [of Claim 1, 2, 3, 4, 5, 6, or 8] comprising an amino acid sequence as depicted in Figure 5 (SEQ ID NO: 8) with GDP-fucose and a molecule having a terminal Galβ1→3GalNAc moiety and recovering [a]the molecule comprising Fucα1→2Galβ1→3GalNAc.

49. (Amended) A method for the preparative synthesis of a glycolipid, glycoprotein, glycolipoprotein or free oligosaccharide comprising Fucα1→2Galβ1→3GalNAc, said method comprising contacting [the]an isolated or purified [rat α1→2fucosyltransferase of claim 1, 2, 3, 4, 5, 6 or 8]protein comprising an amino acid sequence as depicted in Figure 5 (SEQ ID NO: 8) with GDP-fucose and a glycolipid, glycoprotein, glycolipoprotein or free oligosaccharaide having a terminal Galβ1→3GalNAc moiety and recovering [a]the glycolipid, glycoprotein, glycolipoprotein or free oligosaccharaide comprising Fucα1→2Galβ1→3GalNAc.

50. (Amended) The method according to Claim 49 wherein the [rat] α1→2fucosyltransferase is contacted with an oligosaccharide comprising a terminal Galβ1→3GalNAc moiety.

51. (Amended) A method for the preparative synthesis of fucosyl-GM_1 comprising contacting [the]an isolated or purified [rat] α1→2fucosyltransferase [of Claim 1, 2, 3, 4, 5, 6 or 8]comprising an amino acid sequence as depicted in Figure 5 (SEQ ID NO: 8) with GDP-fucose and the ganglioside GM_1 and recovering fucosyl-GM_1.

52. (Amended) A method for the preparative synthesis of a molecule comprising Fucα1→2Galβ1→3GalNAc, said method comprising contacting [the isolated or purified rat]a recombinant α1→2fucosyltransferase [of Claim 33, 36, 39, or 42] or [the]a cellular fraction [of Claim 34, 37, 40, or 43]of a recombinant cell containing a vector having a nucleotide sequence that encodes and expresses an amino acid sequence as depicted in Figure 5 (SEQ ID NO: 8) and having α1→2 fucosyltransferase activity, with GDP-fucose and a molecule having a terminal Galβ1→3GalNAc moiety and recovering a molecule comprising Fucα1→2Galβ1→3GalNAc.

53. (Amended) A method for the preparative synthesis of a glycolipid, glycoprotein, glycolipoprotein or free oligosaccharide comprising Fucα1→2Galβ1→3GalNAc, said method comprising contacting [the]an isolated or purified recombinant produced rat α1→2fucosyltransferase [of Claim 33, 36, 39, or 42] or [the]a cellular fraction [of Claim 34, 37, 40, or 43]of a recombinant cell containing a vector having a nucleotide sequence as depicted as SEQ ID NO: 7 and having α1→2 fucosyltransferase activity, with GDP-fucose and a glycolipid, glycoprotein, glycolipoprotein or oligosaccharide having a terminal Galβ1→3GalNAc moiety and recovering a glycolipid, glycoprotein, glycolipoprotein or free oligosaccharide comprising Fucα1→2Galβ1→3GalNAc.